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Common Metadata Repository (CMR) Life-Cycle Document

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Common Metadata Repository (CMR) Life-Cycle Document
Signature/Approval Page

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Preface

Approval of this Life-Cycle document by the CMR Project Manager ratifies the process, roles, and responsibilities for modifying CMR element requirements. With the approval of the CMR Project Manager, the CMR System Engineering Manager will make revisions as needed to the CMR Life-Cycle Document in order to improve the management and operations of the CMR. The latest version of this document can be found online at [URL]. Distribution is unlimited.

Change Record Page

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1 Introduction and Scope

The Common Metadata Repository (CMR) is designed to allow continuous evolution of all system components to maintain the highest quality system for data providers and consumers. This document describes the CMR Life-Cycle process and specifies how all CMR element requirements are managed, updated, modified, reviewed, and approved for implementation through an open and transparent process involving all stakeholders.

It should be noted that a separate document – the CMR Metadata Quality Assurance Review Process - details the process for metadata updates and quality assurance (QA); while a second separate document - the GCMD Keyword Community Guide - records the process for submitting, reviewing, and accepting GCMD Keywords. As such, the QA and GCMD Keyword processes are not described in the CMR Life-Cycle document.

The CMR is a continuously evolving metadata system that merges all existing capabilities and metadata from EOS Clearing House (ECHO) and the Global Change Master Directory (GCMD) systems. The CMR elements include all system components, which consist of: CMR itself (formerly the [ECHO]), GCMD, International Data Network (IDN), Earth Science Data and Information System (ESDIS) Metrics System (EMS), all related tools (internal and external), and all metadata including the Unified Metadata Model (UMM) concepts, the GCMD Keywords Controlled Vocabulary, and other controlled vocabularies.

2 Abstract: CMR Life-Cycle Process Overview

The CMR Life-Cycle Process begins with stakeholder recommendations for changes, additions, or deprecations. Once submitted, change requests are entered into a tracking system where they are evaluated in terms of cost and benefits, and impact assessments are documented. The proposed changes that are determined to be beneficial to the user community or improve the CMR system are then implemented and the approval status of the request is communicated to the requestor and all stakeholders. In cases of significant, non-routine changes, the request and approval status will also be documented on the Wiki.

Overview:

- Stakeholder submits a change request to support@earthdata.nasa.gov.
- CMR team evaluates and, if accepted, modifies CMR requirements accordingly.
- Revised requirements and an impact statement are submitted to ESDIS Standards Office (ESO) to conduct a stakeholder review.

- Following ESO review, the CMR team may make further changes to the requirements or documentation based on ESO comments and recommendations.
- Changed requirements are then implemented in CMR.

2.1 Types of Change Requests

Submitted requests can be generally classified as:

- **New –** Requests for a new CMR element
- **Modified –** Requests for modifying an existing CMR element
- **Deprecated –** Requests to have an existing CMR element deprecated and then later removed.

2.2 Change Request Process Time Frame

While every effort will be made to acknowledge and evaluate all submitted change requests in a timely manner, it should be noted that evaluation and review of complex changes or those with significant impact (e.g. a new UMM concept or keyword) may require lengthier evaluations and reviews. Major changes will be implemented several times a year and minor ones within a shorter time frame. Requests for the addition of some GCMD Keywords (e.g. instrument, platform, organization) are considered routine and will undergo a streamlined process with quick turn-around and limited review.

3 Roles and Responsibilities

The following organizations, groups, and individuals are key players in the CMR Life-Cycle Process:

Stakeholders consist of the EOSDIS data centers and user communities, as well as inter-agency, external, and international metadata providers to the CMR – including the CMR Team. They may make suggestions for improvement to the CMR, and may be asked to provide input into the review of any proposed changes.

The CMR Team is composed of the CMR Development and Sustaining Engineering Team; the CMR System Engineering Team; and the CMR Operations Team – which is comprised of Science Operations and System Operations.

The CMR System Engineering Team (SET) provides both science expertise and technical system implementation expertise. The SET is responsible for managing all CMR requirements, maintaining CMR documentation, documenting all proposed changes to CMR, performing impact assessment for these proposed changes and recommending disposition of the proposed change to the CMR Project Manager.

CMR Project Manager is responsible for decisions about whether to implement the proposed change based on documented recommendations from the SET.

ESDIS Standards Office (ESO) is responsible for facilitating stakeholder review of proposed changes and recommending disposition of the proposed change to SET based on stakeholder input.

4 CMR Life-Cycle Process Detail

This section provides additional details of the CMR Life-Cycle Process. Within the CMR Team, the CMR SET is the lead for managing the modification process for a proposed change. However, documentation for the change may come from another part of the CMR Team that has the subject matter expertise for the specified change; and the later implementations will be done by the appropriate implementation group within the broader CMR team. The SET lead will work with the CMR Project Manager to get the necessary approvals during key points of the change process.

4.1 Submission, Initial Assessment, and Pre-vetting

Proposed changes to the CMR system can come from the stakeholder community and/or the CMR team. When a change is proposed to the CMR team <support@earthdata.nasa.gov>, it is the responsibility of the CMR SET to perform a preliminary cost-benefit analysis of the proposed change and make a decision to either further analyze or reject the request. The purpose of the preliminary cost-benefit analysis is to pre-vet the proposed change. During this initial evaluation, the CMR SET will consult with other impacted internal (e.g. GIBS, EDSC) and external (e.g. Federated Giovanni) stakeholders that rely on the CMR and will continue their consultation with these stakeholders as appropriate.

- If the request is accepted for further analysis:
  - The CMR SET assesses the costs and benefits of the proposed change and, if warranted, prepares an initial Impact Assessment and a team recommendation on whether to pursue the proposed change.
  - If approved by the SET lead, the SET will prepare the formal documentation package of the proposed change – and following approval by the CMR Project Manager – will submit the package to ESO.

- If the proposed change is rejected, the SET will notify the original submitter.

All suggestions and recommended changes are tracked by the CMR Team and all decisions are documented and published.

4.2 Impact Assessment for the Proposed Change

An impact assessment is essential to understanding how the proposed change will affect the current system implementation and to identifying what and who will be impacted.

The impact assessment will:

- Address whether the proposed change is a new or a revised concept/element and evaluate how it will be incorporated into the existing system.
- Briefly describe the impact the proposed change will have on existing data, data systems, metadata providers, and users.
- Clearly assert and communicate cases where the proposed change will not maintain compatibility with existing data or data systems.

A preliminary impact assessment will be considered during the preliminary cost-benefit analysis when the CMR SET lead determines whether to further analyze or reject the proposed change. A full impact assessment will be employed during the review of the proposed change documentation and subsequently, during CMR Project Manager's final deliberation on whether to proceed to implementation.

4.3 Review Process for the Proposed Change

1. The CMR Team will revise the appropriate CMR document to incorporate the proposed change, provide an impact assessment, and send both the revised CMR document and the impact assessment to the ESO for review.
2. The ESO will conduct a public review of the proposed change.
3. The ESO will provide a written recommendation for approval or rejection of the CMR Proposed Change to the CMR Project Manager.
4. The CMR Project Manager will render a decision as to whether the change should or should not be implemented and the CMR Team will subsequently relay the outcome to the original submitter of the proposed change.
5. Time frame allotted to complete the process is expected to vary on a case by case basis.

4.4 Implementation of the Proposed Change

Once the CMR Project Manager decides to go forward with the implementation of the CMR Proposed Change, the work is scheduled and

performed by the Development and Sustaining Engineering Team in coordination with the other CMR Teams.

After the change is implemented, a new version of the affected CMR document and any associated artifacts will be published and announced to the user community.

4.5 Additional Information About the Change Process

Earthdata.nasa.gov: The CMR Team Wiki page on which current versions of all CMR documents/artifacts and keyword releases are located. This page will point to any current ESO reviews of CMR documents and artifacts; and any identified issues.

5 Periodic Internal Reviews

The CMR SET will regularly perform periodic reviews of all CMR concepts and documents to ensure that the CMR concepts are still relevant, applicable and useful to the user community. Proposed changes resulting from an internal review will follow the same procedure described above, and in all cases, the CMR SET decides whether a documentation effort and public review will be initiated for the proposed change. Emails, telecons, and meetings as appropriate will be used by the CMR Team to communicate changes resulting from periodic internal reviews to the stakeholders. Additionally, CMR information will have a visible web presence on the Earthdata Wiki.

6 CMR Elements for Future Change

The Life-Cycle defined in this document applies to all elements of the CMR:

- *Unified Metadata Model for Collections (UMM-C)*
- *Unified Metadata Model for Granules (UMM-G)*
- *Unified Metadata Model for Parameters (UMM-P)*
- *Unified Metadata Model for Visualization (UMM-V)*
- Any elements of the UMM that may be added in the future – *ex: UMM-S (Services)*
- GCMD Keywords
- CMR system components
- CMR tools
- EMS

7 References

7.1 Document References

Unified Metadata Model for Collections (UMM-C)
Unified Metadata Model for Granules (UMM-G)
Unified Metadata Model for Parameters (UMM-P)
Unified Metadata Model for Visualization (UMM-V)
GCMD Keyword Community Guide
CMR Metadata Quality Assurance Review Process

7.2 Contacts

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7.3 Glossary of Acronyms

DIF - Directory Interchange Format
CMR - Common Metadata Repository
ECHO - EOS ClearingHOuse
EMS - ESDIS Metrics System
EOSDIS - Earth Observing System Data and Information System
ESO - ESDIS Standards Office
ESDIS - Earth Science Data and Information System
GCMD – Global Change Master Directory
IDN – International Directory Network
SET – System Engineering Team
UMM - Unified Metadata Model
UMM-C - UMM-Collections
UMM-G - UMM-Granules
UMM-P - UMM-Parameters
UMM-V - UMM Visualization